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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,145	07/25/2003	Jameson R. Forte	8540G-000086/COB (GP-3013)	2529
27572	7590	04/21/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			CREPEAU, JONATHAN	
			ART UNIT	PAPER NUMBER
			1746	

DATE MAILED: 04/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

10/627,145

Applicant(s)

FORTE ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/25/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Acknowledgement is made of the election without traverse of claims 1-9 and the cancellation of claims 10-20. Claims 1-9 are addressed on the merits herein.

### ***Claim Suggestions***

2. In claim 1, the antecedent basis of "its dew point" is presumed to be "said cathode effluent," but the claim language does not make this clear. Appropriate correction is suggested but not required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voss et al (U.S. Patent 6,106,964) in view of GB 2139110.

Voss et al. is directed to a fuel cell system comprising a fuel cell having anode and cathode inputs and outputs (see Fig. 2). A water transfer device (400) is connected to the fuel cell that transfers water from either of the cathode or anode exhaust streams to either of the supply

streams (see col. 9, lines 30-35; col. 7, lines 25-31). The water transfer device comprises a poly[perfluorosulfonic] acid membrane (see col. 5, lines 47-53). The anode supply stream may comprise reformat produced by a fuel processor (see col. 15, line 46). The temperature of the cathode effluent at the device inlet would inherently not be significantly greater than the temperature of the cathode effluent at the cathode output.

Voss et al. do not expressly teach that the temperature at the device input is sufficient to maintain water in its vapor state and being up to 10 degrees above its dew point, as recited in claim 1.

GB 2139110 is directed to a water vapor exchange device comprising a membrane (see abstract). On page 2, line 44, the reference teaches that “[i]t is apparent, therefore, that the arrangement described above is effective in transferring water vapor from one gaseous stream to another gaseous stream in a direct fashion without having to condense the water, pump it and revaporize it before transferring it to the recipient stream.”

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of the GB reference to maintain the cathode effluent of Voss et al. at a sufficient temperature and pressure so as to avoid condensing any of the water inside the water transfer device. The device of Voss et al. is similar to the device of the GB reference. As noted above, the goal of the GB reference is to eliminate the apparatus associated with condensing water when it is transferred between streams. The GB reference further teaches on page 2, line 55 that “[a] very effective, inexpensive arrangement for humidifying a gaseous stream by transferring

gaseous vapor between one stream and another has been provided.” Accordingly, this disclosure would sufficiently motivate the artisan to keep the oxidant exhaust stream of Voss et al. at a temperature and pressure sufficient to keep the water in the vapor state and to prevent condensation in the water transfer device.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voss et al. in view of GB 2139110 as applied to claims 1-3 and 5 above, and further view of Bloomfield (U.S. Patent 3,976,507).

Voss et al. do not expressly teach that the fuel is reformed by an autothermal reformer.

The patent of Bloomfield is directed to a fuel cell system comprising an autothermal reformer (see Fig. 1).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of Bloomfield to use an autothermal reformer in the system of Voss et al. In column 2, line 45, Bloomfield teaches that the autothermal reactor is advantageous because it “does not require a separate burner to supply heat.” Therefore, the artisan would be motivated to use an autothermal reformer in the system of Voss et al. in order to make more efficient use of heat.

6. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voss et al. in

view of GB 2139110 as applied to claims 1-3 and 5 above, and further view of JP 6-333583.

Regarding claim 6, Voss et al. further teach in column 15, line 48 that “in conventional operation, the compressed air was humidified prior to entering the fuel cell by first flowing it through a cross-flow membrane humidifier.”

However, Voss et al. do not expressly teach that the air is compressed *after* humidification, as recited in claim 6.

JP 6-333583 is directed to a fuel cell system comprising a compressor (42) downstream of a cathode supply line humidifier (43; see Fig. 1).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of the Japanese reference to position the compressor in the system of Voss et al. downstream of the humidifier. In paragraph [0025] of the machine translation, the Japanese reference teaches that this configuration results in less evaporation of the moisture from the polymer electrolyte film. Accordingly, the artisan would be motivated to move the compressor in the system of Voss et al. to a position downstream of the humidifier.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voss et al. in view of GB 2139110 and JP 6-333583 as applied to claims 6-8 above, and further in view of

~~Bloomfield.~~

Voss et al. do not expressly teach that the fuel is reformed by an autothermal reformer.

As noted above, the patent of Bloomfield is directed to a fuel cell system comprising an autothermal reformer.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of Bloomfield to use an autothermal reformer in the system of Voss et al. In column 2, line 45, Bloomfield teaches that the autothermal reactor is advantageous because it "does not require a separate burner to supply heat." Therefore, the artisan would be motivated to use an autothermal reformer in the system of Voss et al. in order to make more efficient use of heat.

### ***Double Patenting***

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1-9 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 6,630,260 in view of GB

2139110 and JP 6-333583. The claims of the '260 patent recite a configuration wherein a water transfer device transfers water from an effluent to a supply stream. The claims do not recite the dew point ranges recited in the instant claims, or the presence of a compressor. However, these limitations would be rendered obvious in view of GB '110 and JP '583 for substantially the same reasons set forth above. As such, the instant claims are considered to define an obvious variation of the '260 patent claims.

### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

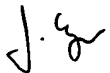
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR



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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau  
Primary Examiner  
Art Unit 1746  
April 18, 2005